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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/669,533	09/24/2003	Jeffrey A. Lucas	207275.0697	4631
45017	7590	04/01/2005	EXAMINER	
<b>CUNO INCORPORATED</b> 400 RESEARCH PARKWAY P. O. BOX 1018 MERIDEN, CT 06450-1018				KEELER, KIMBERLY A
		ART UNIT		PAPER NUMBER
		1723		

DATE MAILED: 04/01/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No.	Applicant(s)
	10/669,533	LUCAS ET AL.
	Examiner Kimberly Keeler	Art Unit 1723

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

1) Responsive to communication(s) filed on 01 February 2005.  
 2a) This action is FINAL.                            2b) This action is non-final.  
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

4) Claim(s) 1-22 is/are pending in the application.  
 4a) Of the above claim(s) 18 and 19 is/are withdrawn from consideration.  
 5) Claim(s) \_\_\_\_\_ is/are allowed.  
 6) Claim(s) 1-22 is/are rejected.  
 7) Claim(s) \_\_\_\_\_ is/are objected to.  
 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

9) The specification is objected to by the Examiner.  
 10) The drawing(s) filed on 12 January 2004 is/are: a) accepted or b) objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) All    b) Some \* c) None of:  
 1. Certified copies of the priority documents have been received.  
 2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

1) Notice of References Cited (PTO-892)  
 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)  
 3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
 Paper No(s)/Mail Date \_\_\_\_\_

4) Interview Summary (PTO-413)  
 Paper No(s)/Mail Date. \_\_\_\_\_  
 5) Notice of Informal Patent Application (PTO-152)  
 6) Other: \_\_\_\_\_

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. Claims 1-4, 6, 7, 9, 10, 12-14, 16, 17, and 20-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miller et al (U.S. Patent No. 5,275,743) in view of Pall (U.S. Patent No. 4,033,881).

4. As to claim 1, Miller ('743) teaches a filter element (10), comprising a filtration media (22), an upstream filtration media support (21) positioned upstream from and in contact with said filtration media (22) and a multi-layer downstream filtration media support (23,24) positioned downstream from said filtration media (22), said multi-layer downstream support (23,24) including a first downstream support layer (23) and a second downstream support layer (24), wherein: said first downstream support layer

(23) is in contact with said filtration media (22) and is interposed between said filtration media (22) and said second downstream layer (24). The first downstream support layer (23) is fabricated so as to minimize points of surface contact with said filtration media (22); and said second downstream support layer (24) is in contact with said first downstream support layer (23) and is fabricated so as to facilitate lateral fluid flow relative to said multi-layer downstream media support (23,24). Miller further teaches a polymeric mesh material of manufacture for the second downstream layer and more specifically states a suitable polymeric mesh, such as, Naltex and Zicot. Both of these meshes/nettings are known in the art as an extruded mesh/net. See the Delstar website at [www.delstarinc.com](http://www.delstarinc.com) for information regarding Naltex and US Patent 5,725,784 column 7 lines 6-8 to Geibel et al regarding Zicot. Miller is silent to the extruded polymeric mesh having ribs. However, Pall ('881) teaches a pleated filter cartridge with upstream and downstream support members fabricated from extruded netting with ribs in column 3 lines 63-66 and column 4 lines 12-14. It is considered to have been obvious to one of ordinary skill in the art to fabricate the downstream support layer from an extruded mesh/net with ribs because an extruded mesh/net is a conventional material of manufacture for the downstream support layer and the ribs provide the support layer with reinforcement useful in pressurized filtration systems, such as, Miller and Pall's.

5. As to claim 2, Miller ('743) discloses a filter element wherein the filtration media is a pleated filtration media having a plurality of longitudinally extending pleats in column 8 lines 66-68, which meet's applicant's claim.

6. As to claim 3, Miller ('743) teaches the use of a pleated filtration media (column 2 lines 32-36) selected from the group consisting of radial pleats, w-pleats and spiral pleats (column 5 lines 28-31), which meet's applicant's claim.
7. As to claim 4, Miller ('743) describes a filter element in column 2 lines 58-64, wherein the filtration media is a microporous filtration membrane having a pore size of 10 microns or less, which meet's applicant's claim.
8. As to claim 6, Miller ('743) describes, column 3 lines 58-63, the multi-layer downstream support consisting of said first downstream support layer and said second downstream support layer, which meet's applicant's claim.
9. As to claim 7, Miller ('743) also describes the first downstream support layer is fabricated from a nonwoven material in column 3 lines 61-63, which meet's applicant's claim.
10. As to claim 9, Miller ('743) teaches said nonwoven material is fabricated as a wetlaid material in column 2 line 17, which meet's applicant's claim.
11. As to claim 10, Miller ('743) also states said nonwoven material is fabricated from polyester in column 4 line 24, which meet's applicant's claim.
12. As to claim 12, Miller ('743) teaches a filter element (10), comprising a filtration media (22), an upstream pleat support (21) positioned upstream from and in contact with said filtration media (22) and a multi-layer downstream pleat support (23,24) positioned downstream from said filtration media (22), said multi-layer downstream support (23,24) including a first downstream support layer (23) and a second downstream support layer (24), wherein said first downstream support layer (23) is in

contact with said filtration media (22) and is interposed between said filtration media (22) and said second downstream layer (24). The first downstream support layer (23) is fabricated so as to minimize points of surface contact with said filtration media (22); and said second downstream support layer (24) is in contact with said first downstream support layer (23) and is fabricated so as to facilitate lateral fluid flow relative to said multi-layer downstream pleat support (23,24). Miller further teaches a polymeric mesh material of manufacture for the second downstream layer and more specifically states a suitable polymeric mesh, such as, Naltex and Zicot. Both of these meshes/nettings are known in the art as an extruded mesh/net. See the Delstar website at [www.delstarinc.com](http://www.delstarinc.com) for information regarding Naltex and US Patent 5,725,784 column 7 lines 6-8 to Geibel et al regarding Zicot. Miller is silent to the extruded polymeric mesh having ribs. However, Pall ('881) teaches a pleated filter cartridge with upstream and downstream support members fabricated from extruded netting with ribs in column 3 lines 63-66 and column 4 lines 12-14. It is considered to have been obvious to one of ordinary skill in the art to fabricate the downstream support layer from an extruded mesh/net with ribs because an extruded mesh/net is a conventional material of manufacture for the downstream support layer and the ribs provide the support layer with reinforcement useful in pressurized filtration systems, such as, Miller and Pall's.

13. As to claim 13, Miller ('743) also teaches a filter cartridge comprising a filter element (10) having a longitudinal axis, an outer periphery and an inner periphery, and including a filtration media (22), an upstream filter media support (21) positioned upstream from and in contact with said filtration media (22); and a multi-layer

downstream support (23,24) positioned downstream from said filtration media (22), said multi-layer downstream support (23,24) including a first downstream support layer (23) and a second downstream support layer (24), wherein the first downstream support layer (23) is in contact with said filtration media (22) and is interposed between said filtration media (22) and said second downstream layer (24), said first downstream support layer (23) being fabricated so as to minimize points of surface contact with said filtration media (22). The second downstream support layer (24) is in contact with said first downstream support layer (23) and is fabricated so as to facilitate lateral fluid flow relative to said multi-layer downstream filter media support (23,24); a perforated cage (11) surrounding the outer periphery of the filter element; a perforated core (12) surrounded by the inner periphery of the filter element; and end caps (13,14) enclosing both ends of the perforated cage (11). Miller further teaches a polymeric mesh material of manufacture for the second downstream layer and more specifically states a suitable polymeric mesh, such as, Naltex and Zicot. Both of these meshes/nettings are known in the art as an extruded mesh/net. See the Delstar website at [www.delstarinc.com](http://www.delstarinc.com) for information regarding Naltex and US Patent 5,725,784 column 7 lines 6-8 to Geibel et al regarding Zicot. Miller is silent to the extruded polymeric mesh having ribs. However, Pall ('881) teaches a pleated filter cartridge with upstream and downstream support members fabricated from extruded netting with ribs in column 3 lines 63-66 and column 4 lines 12-14. It is considered to have been obvious to one of ordinary skill in the art to fabricate the downstream support layer from an extruded mesh/net with ribs because an extruded mesh/net is a conventional material of manufacture for the downstream

support layer and the ribs provide the support layer with reinforcement useful in pressurized filtration systems, such as, Miller and Pall's.

14. As to claim 14, Miller ('743) also describes the first downstream support layer is fabricated from a nonwoven material in column 3 lines 61-63, which meet's applicant's claim.

15. As to claim 16, Miller ('743) states said nonwoven material is fabricated as a wetlaid material in column 2 line 17, which meet's applicant's claim.

16. As to claim 17, Miller ('743) also states said nonwoven material is fabricated from polyester in column 4 line 24, which meet's applicant's claim.

17. As to claim 20, Miller (743) discloses in Figure 1 a perforated cage (11) is equipped with end caps (13,14) at both ends thereof, which meet's applicant's claim.

18. As to claim 21, Miller (743) discloses in Figure 1 said perforated core (12) is a cylindrical core and is coaxially positioned within the filter element, which is a cylindrical filter element, and the cage (11) is likewise cylindrical and is coaxially positioned about the cylindrical filter element, which meet's applicant's claim.

19. As to claim 22, Miller (743) also teaches a filter cartridge comprising a filter element (10) having a longitudinal axis, an outer periphery and an inner periphery, and including a filtration media (22), an upstream filter pleat support (21) positioned upstream from and in contact with said filtration media (22); and a multi-layer downstream support (23,24) positioned downstream from said filtration media (22), said multi-layer downstream support (23,24) including a first downstream support layer (23) and a second downstream support layer (24), wherein the first downstream support

layer (23) is in contact with said filtration media (22) and is interposed between said filtration media (22) and said second downstream layer (24), said first downstream support layer (23) being fabricated so as to minimize points of surface contact with said filtration media (22). The second downstream support layer (24) is in contact with said first downstream support layer (23) and is fabricated so as to facilitate lateral fluid flow relative to said multi-layer downstream filter pleat support (23,24); a perforated cage (11) surrounding the outer periphery of the filter element; a perforated core (12) surrounded by the inner periphery of the filter element; and end caps (13,14) enclosing both ends of the perforated cage (11). Miller further teaches a polymeric mesh material of manufacture for the second downstream layer and more specifically states a suitable polymeric mesh, such as, Naltex and Zicot. Both of these meshes/nettings are known in the art as an extruded mesh/net. See the Delstar website at [www.delstarinc.com](http://www.delstarinc.com) for information regarding Naltex and US Patent 5,725,784 column 7 lines 6-8 to Geibel et al regarding Zicot. Miller is silent to the extruded polymeric mesh having ribs. However, Pall ('881) teaches a pleated filter cartridge with upstream and downstream support members fabricated from extruded netting with ribs in column 3 lines 63-66 and column 4 lines 12-14. It is considered to have been obvious to one of ordinary skill in the art to fabricate the downstream support layer from an extruded mesh/net with ribs because an extruded mesh/net is a conventional material of manufacture for the downstream support layer and the ribs provide the support layer with reinforcement useful in pressurized filtration systems, such as, Miller and Pall's.

20. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Miller et al (U.S. Patent No. 5,275,743) in view of Bayerlein et al. (U.S. Patent No. 6,153,098), as stated in the paper mailed 3 November 2004.
21. Claims 8 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miller et al (U.S. Patent No. 5,275,743), as stated in the paper mailed 3 November 2004.
22. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Miller et al (U.S. Patent No. 5,275,743) in view of Pall (U.S. Patent No. 4,033,881), as stated in the paper mailed 3 November 2004.

### ***Response to Arguments***

23. Applicant's arguments filed 1 February 2005 have been fully considered but they are not persuasive. Applicants contend that the Pall reference stating an extruded netting with ribs is not equivalent to an apertured film because of differences in design and manufacture. Applicant's specification references a preferred material of manufacture for the extruded apertured film for the second downstream support layer, Delstar Delnet RC-0707-24P. However, Delstar Delnet is an apertured film that is specifically an extruded lightweight nonwoven netting fabric. As cited from the Delstar website ([www.delstarinc.com](http://www.delstarinc.com)) "Utilize our **Delnet® apertured films** to support and separate delicate filtration media. The controlled porosity of this precise mesh enhances turbulent flow in tight pleat packs, improves efficiency and permits even flow across the

membrane. Delnet products are excellent as surface layers for medical facemasks and as outer dust release layers in air filter applications". It is noted that applicant's own admissions disclose the use of extruded netting as the preferred material of manufacture for the second downstream support layer. The examiner maintains the position that an extruded netting and apertured film are equivalent materials of manufacture.

### ***Conclusion***

24. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kimberly Keeler whose telephone number is 571-272-2460. The examiner can normally be reached on Monday-Friday 9:00-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wanda Walker can be reached on 571-272-1151. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Kak   
3/28/2005

  
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